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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT:	Hiroyuki TAKAMURA	)
		)
SERIAL NO:	10/811,728	) Group Art Unit: 3748
		)
FILED:	March 29, 2004	) Examiner: Ching CHANG
TITLE:	VALVE TRAIN FOR INTERNAL COMBUSTION ENGINE	

Certification under 37 C.F.R. §1.8(b)

The USPTO Central Fax No. (571) 273-8300
Date of Fax Transmittal: January 31, 2006

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted to the United States Patent and Trademark Office to the fax number and on the date indicated above.

Brian W. Hameder, Reg. No. 45,613

Mail Stop Appeal Briefs – Patent
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REVISED APPEAL BRIEF

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1. Whether Claim 1 is properly rejected under 35 U.S.C. §103(a) as being unpatentable over Sada (U.S. Patent No. 5,997,988) in view of Nishioka et al. (U.S. Patent No. 6,367,439)?

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Claim 1 is the only pending claim.

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The Examiner contends that 'the Sada reference discloses "the present invention is applicable to all machine parts each having a contact surface which enters a state of at least one of rolling contact and sliding contact with the other part opposite thereto" (See Col. 5, line 36 through line 39), and the contact surface having a maximum circumference surface roughness in 1.4 or 1.1 μm (See Table 1). Accordingly, the Examiner deems that the Sada reference teaches each of the cam lobe and the roller in Claim 1, having the claimed subject matter of surface roughness 0.4 to 2.2 μm.' (See the Advisory Action issued July 25, 2005 – Continuation Sheet of 11.). In contrast, the Applicant contends that Sada does not disclose or suggest both machine parts (cam lobe and roller follower) contact surfaces having a surface roughness R_a of 0.4 to 2.2 μm, as claimed.

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As referred to above, the Examiner also contends that the disclosed maximum height surface roughness R_y in Sada is equivalent to the claimed surface roughness R_a, which is well understood by persons skilled in the art to be the arithmetic mean surface roughness. In support of the Applicant's assertion of the well known definition of R_a, Applicant previously submitted an English translation of Japanese Industrial Standard B 0601 which defines R_a as the arithmetic mean roughness. As shown in Figure 9 of JIS B 0601, R_a is the average of a series of consecutive peak to valley vertical distances over a sample length of a surface. This value of R_a necessarily would be less than R_y which is defined in Sada as the vertical distance between the greatest peak height and the greatest valley height over a sample length of a surface, as shown in Figure 1 of Sada. Thus, Sada does not disclose the claimed R_a surface roughness values.

Also, as referred to above with regard to the function of the invention disclosed in Sada, the function of the prescribed surface roughness is to obtain an oil film controlled by the small recesses in the surface of the machine parts. This purpose is a function of the maximum height R_y surface roughness which is dependent upon and limited by the ratio of the peak height R_p and the valley depth R_v (R_p/R_v, See Figure 1 in Sada). Sada further describes that invention as being applicable to both rolling contact and sliding contact. The goal of that invention is to reduce wear on the machine parts by the formation of the oil film. In contrast, the function of the present invention is to provide only rolling contact between two machine parts without the formation of an oil film. From the stated purpose and function of Sada, the Applicant contends that there would be no motivation to further modify the invention of Sada to perform a different function. No disclosure, teaching or suggestion of such a modification of the function of the device is present, let alone the claimed features of both machine parts having a specified surface roughness.

The Applicant further considers that even if R_a of the present application were equal to R_y of Sada, that Sada teaches away from using the claimed surface roughness, notwithstanding the fact that Sada teaches R_y equals 3 μm on the second machine part contact surface. Table 1 in Sada shows a R_y value in comparative example 3 within the assumed claimed range that yields a negative result, and a R_y value in embodiment 3 outside the assumed claimed range that

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With regard to the cited reference Nishioka et al., this reference is relied upon to provide an example in the prior art where a sintered material is used to manufacture machine parts. This reference is not relied upon by the Examiner, nor considered by the Applicant, to disclose the claimed features of both the cam lobe and roller follower having the prescribed surface roughness of R_a.

Conclusion

For the reasons given above, the Appellant respectfully submits that neither the relied upon cited references of Sada and Nishioka et al. disclose, teach or suggest the claimed features of both the cam lobe and roller follower having a surface roughness R_a of 0.4 to 2.2 μm. The Appellant thus considers that the Examiner has not met the burden required under 35 U.S.C. §103(a) of proving obviousness in view of these references. Accordingly, the Appellant respectfully requests the Board to reverse the Examiner's rejection of Claim 1, and requests allowance of the application.

Respectfully submitted,

January 31, 2006
Date

Attorney for Applicant
Brian W. Hameder
c/o Ladas & Parry LLP
224 South Michigan Avenue
Chicago, Illinois 60604
(312) 427-1300
Reg. No. 45613

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APPENDIX

Listing of Claims:

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2. (cancelled)

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4. (cancelled)

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Application Serial No. 10/811,728
Revised Appeal Brief dated January 31, 2006

PATENT
DOCKET: CU-3663

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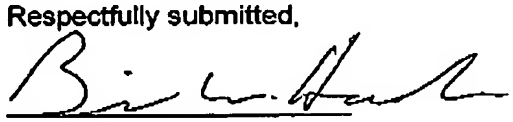

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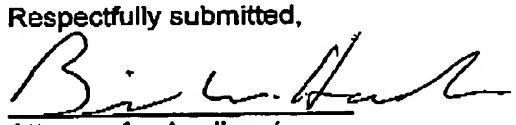
For the reasons given above, the Appellant respectfully submits that neither the relied upon cited references of Sada and Nishioka et al. disclose, teach or suggest the claimed features of both the cam lobe and roller follower having a surface roughness R_a of 0.4 to 2.2 μm. The Appellant thus considers that the Examiner has not met the burden required under 35 U.S.C. §103(a) of proving obviousness in view of these references. Accordingly, the Appellant respectfully requests the Board to reverse the Examiner's rejection of Claim 1, and requests allowance of the application.

Respectfully submitted,



January 31, 2006
Date

Attorney for Applicant
Brian W. Hameder
c/o Ladas & Parry LLP
224 South Michigan Avenue
Chicago, Illinois 60604
(312) 427-1300
Reg. No. 45613

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APPENDIX

Listing of Claims:

1. (previously amended) A valve train for an internal combustion engine comprising a cam lobe fixed on a cam shaft and a roller follower provided with a roller to come in rotation-contact with the cam lobe, wherein the cam lobe is made of an iron based sintered material, and the surface roughness R_a of the outer circumferential surface thereof is 0.4 to 2.2 μm, and the surface roughness R_a of the outer circumferential surface of the roller is 0.4 to 2.2 μm.

2. (cancelled)

3. (cancelled)

4. (cancelled)

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